



WATERLEAU

protecting the 4 elements

The energy potential of the wastewater sector:
the REEF 2W approach

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Director Business Development

AGENDA

- **Who is WATERLEAU**
- **Rethinking wastewater**
- **Circular Economy**
- **Case Study Industrial**
- **Case Study Municipal**



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WATERLEAU

Who are we?

REDUCING THE ENVIRONMENTAL FOOTPRINT



WATER & WASTEWATER

- Drinking water
- Process water
- Waste water
- Water reuse

BIOGAS RECOVERY

- Energy from wastewater
- Energy from sludge
- Energy from biomass

SLUDGE & ORGANIC WASTE

- Solar sludge drying
- Thermal sludge drying
- Sludge Incineration
- Sludge digestion
- Organic waste digestion

AIR TREATMENT

- Biogas treatment
- Odour treatment
- Chemical pollutants abatement
- Dedusting
- Flue gas treatment

OUR PROPOSITION



D&B

DESIGN & BUILD

Turn-Key EPC contractor
for industrial and municipal
water, wastewater, biogas and
air treatment projects



O&M

OPERATIONS & MAINTENANCE

O&M of municipal WWTP,
Advanced After Sales Services
for industrial clients



D&S

DESIGN & SUPPLY

Design and supply of
compact, skidded and
containerized solutions
for fast deployment



DESIGN & BUILD



INDUSTRIAL

Turnkey and tailor-made solutions
to drive down the water, energy,
waste and carbon footprint in all key
industries



MUNICIPAL

General contractor for the design
and construction of potable water
plants and municipal wastewater
treatment plants, including O&M





O&M / SERVICES



OPERATION & MAINTENANCE

More than 150 Waterleau specialists
operate and maintain complex
treatment facilities in all parts of the
world

SERVICES

Our advanced after sales and spare
parts program guarantees capex
protection and regulatory compliance
at minimal opex





DESIGN & SUPPLY



KROFTA®

From the integration of a sole solid-liquid Krofta DAF separation unit to the renting of a complete skidded DAF including pre- and post treatment

FAST TRACK

A fast solution for general contractors wanting to integrate state-of-the-art treatment technology into green projects





OUR TEAM

Committed to Excel



150

BELGIUM

150

MOROCCO

80

MACAU

30

FRANCE

20

GERMANY

20

USA

10

PORTUGAL

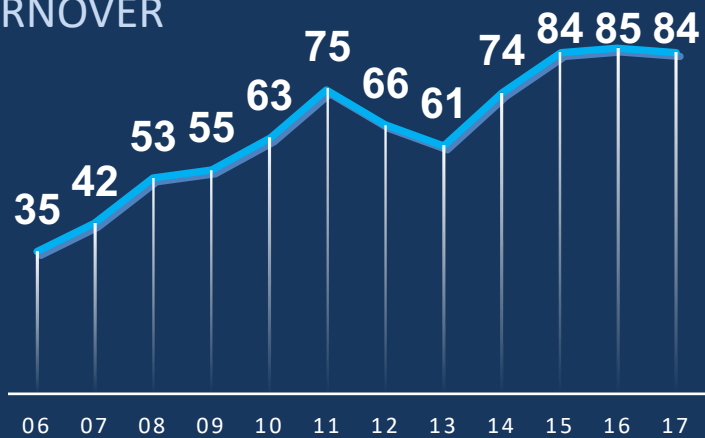
10

EGYPT



470

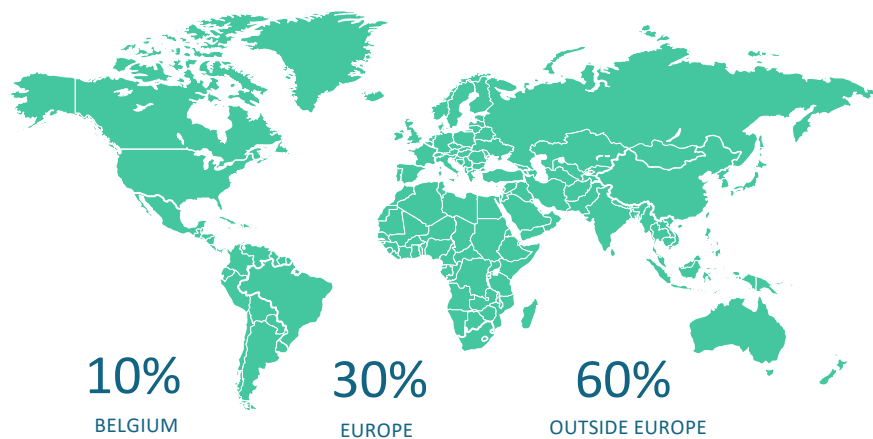
TURNOVER



3000 references



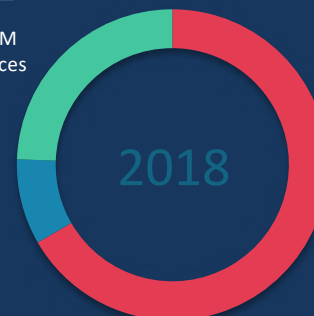
Projects in 85 countries



22

O&M
Services

8
D&S



60
D&B

2018

* € Million, 2018 non audited



OUR TECHNOLOGY

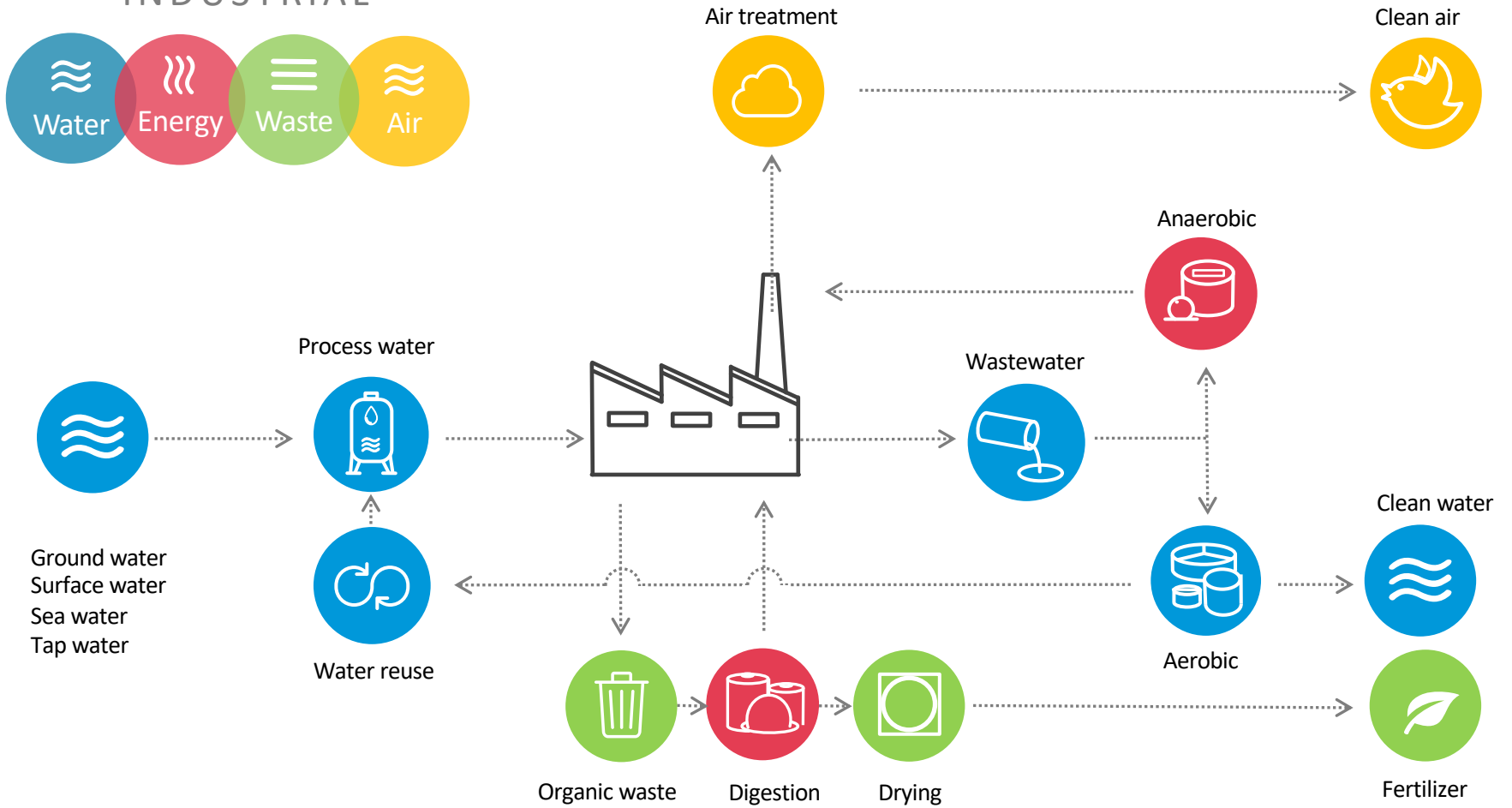
A portfolio of solutions driven by innovation



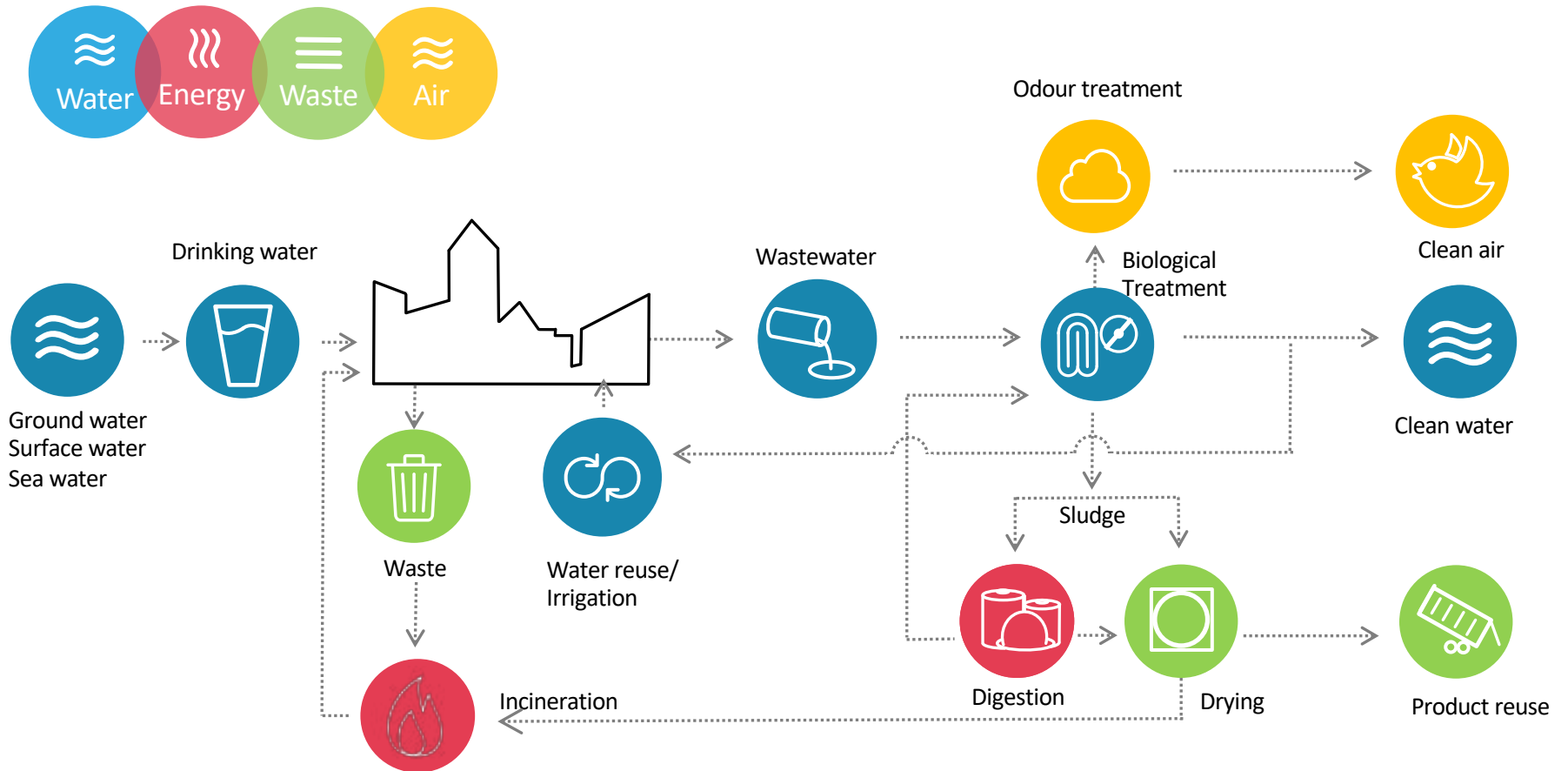
WATERLEAU

protecting the planet

INDUSTRIAL



MUNICIPAL



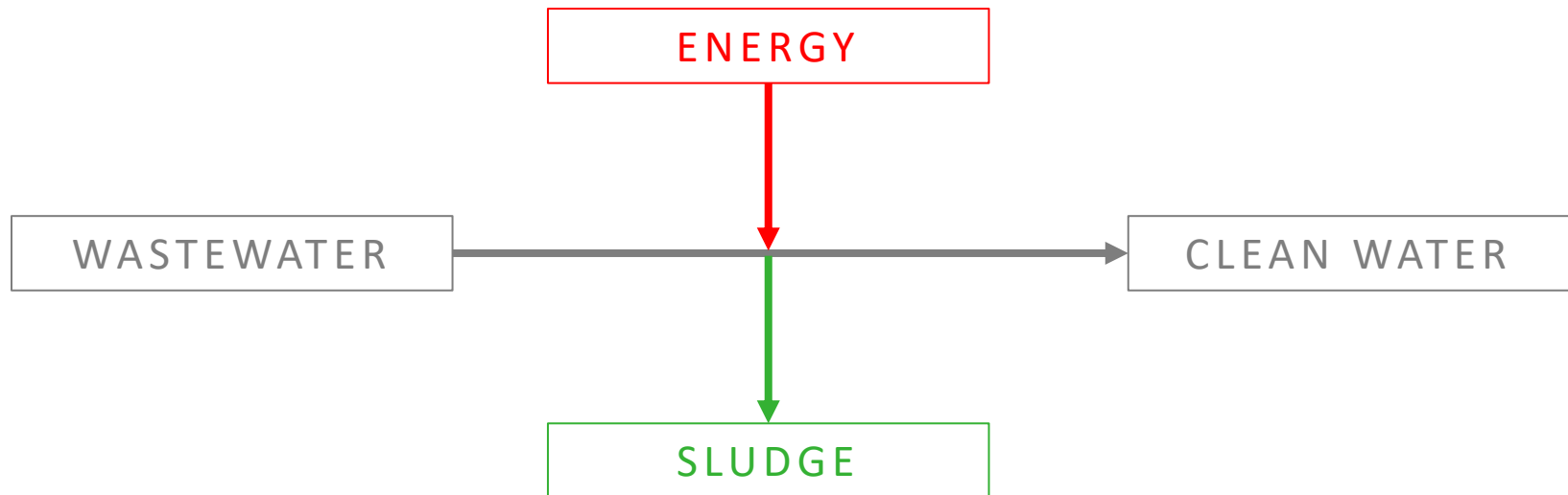


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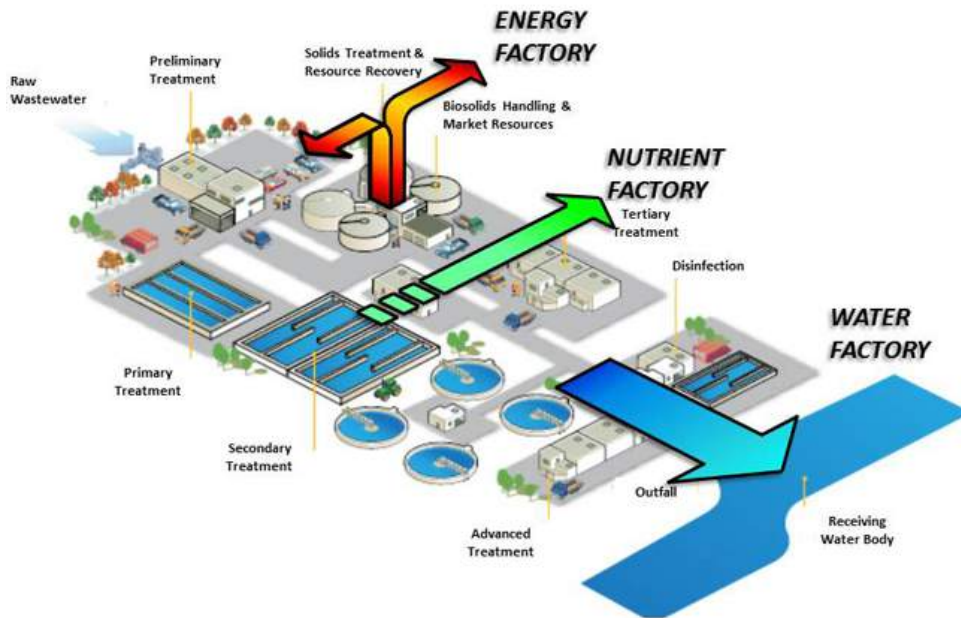
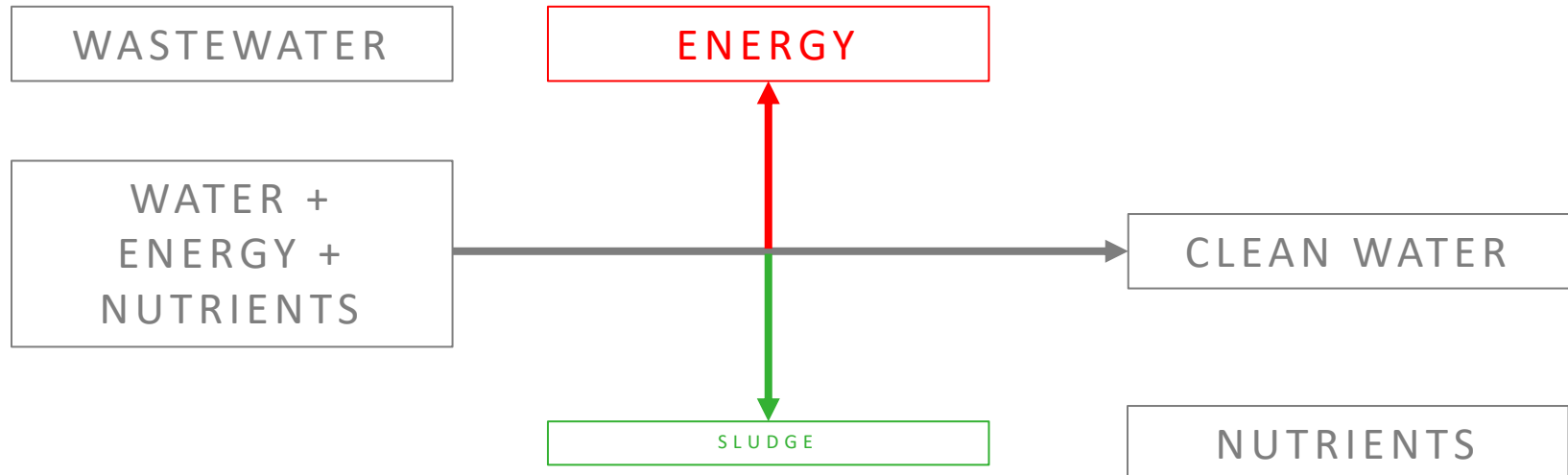
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RETHINKING WASTEWATER

OLD THINKING

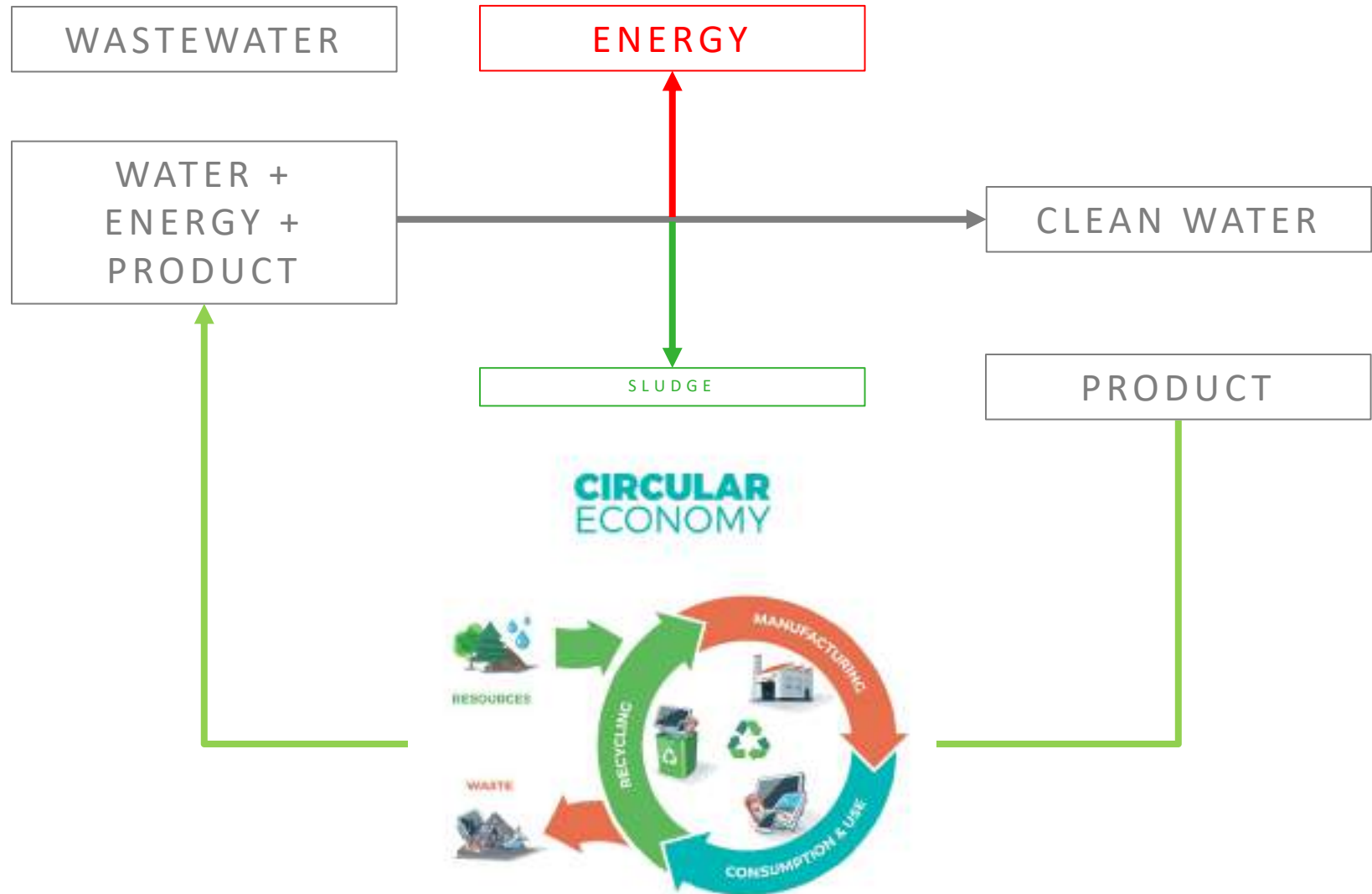


NEW THINKING MUNICIPAL CONTEXT



Verstraete et al. (2009): Chemical energy available in wastewater is more than the amount required for treatment, which means that wastewater treatment plants have great potential for being **energy neutral** or generate **surplus energy** to supply back into the grid

NEW THINKING INDUSTRIAL CONTEXT



CIRCULAR ECONOMY

- Recovery of product
 - Recovery of energy
 - Recovery of clean water
-
- **Sustainable water = cover these 3 aspects**
 - **A competition between these 3 trends !**



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CASE STUDY INDUSTRIAL 1

The energy potential of the wastewater sector

USA – BEAUTY CARE



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USA – BEAUTY CARE

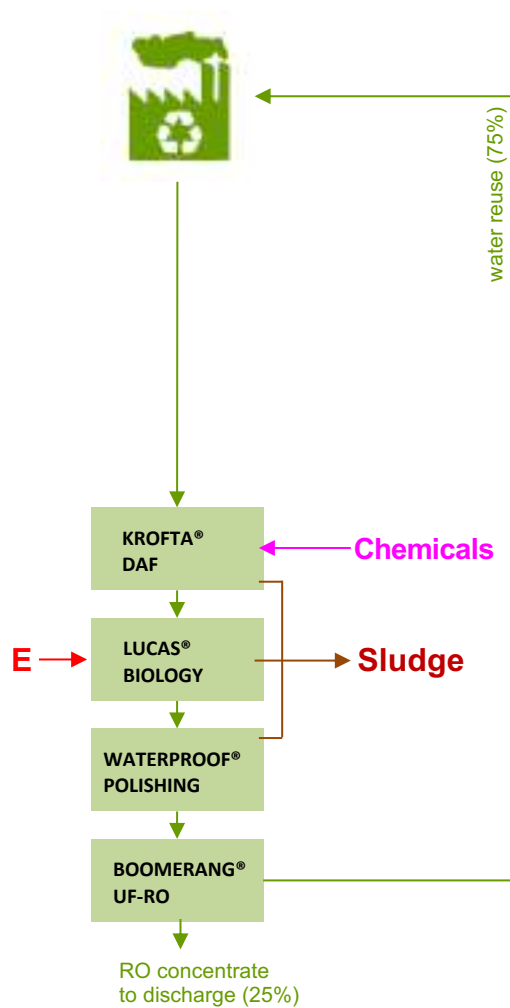


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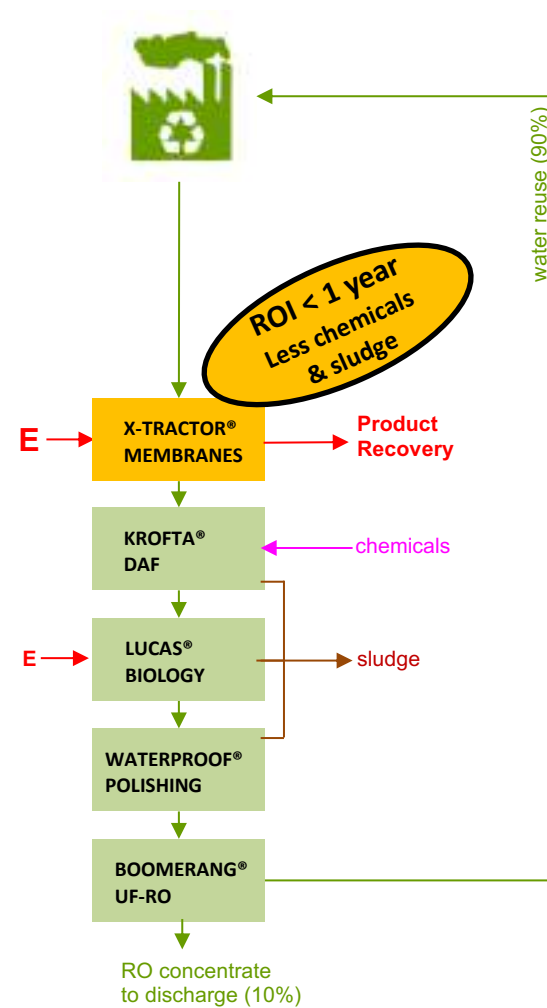


TREATMENT SCHEME

BASE SCHEME



OPTIMIZED SCHEME



OPTIMIZED SCHEME

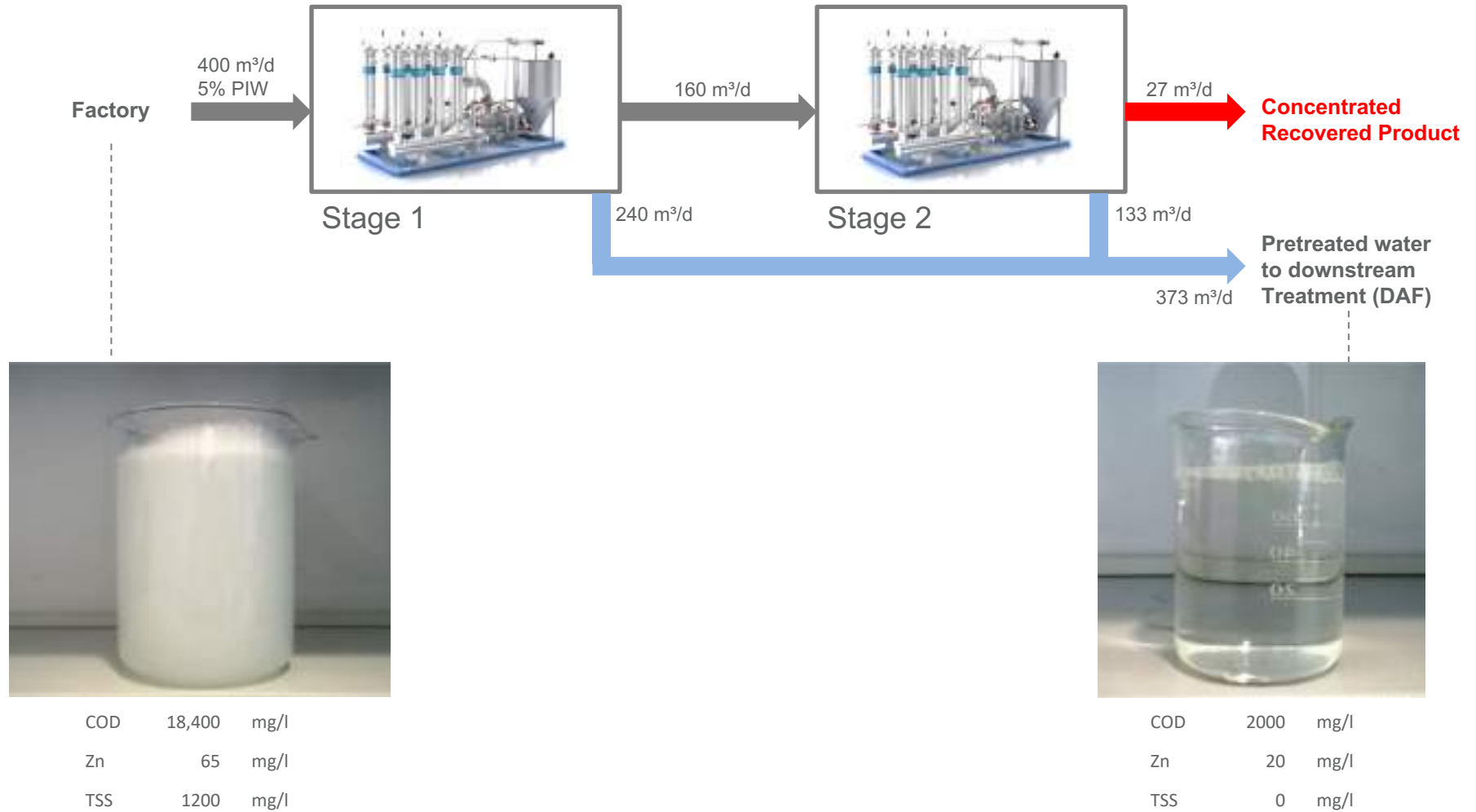
LAB TESTING CAPABILITY



Lab testing during 1 year

OPTIMIZED SCHEME

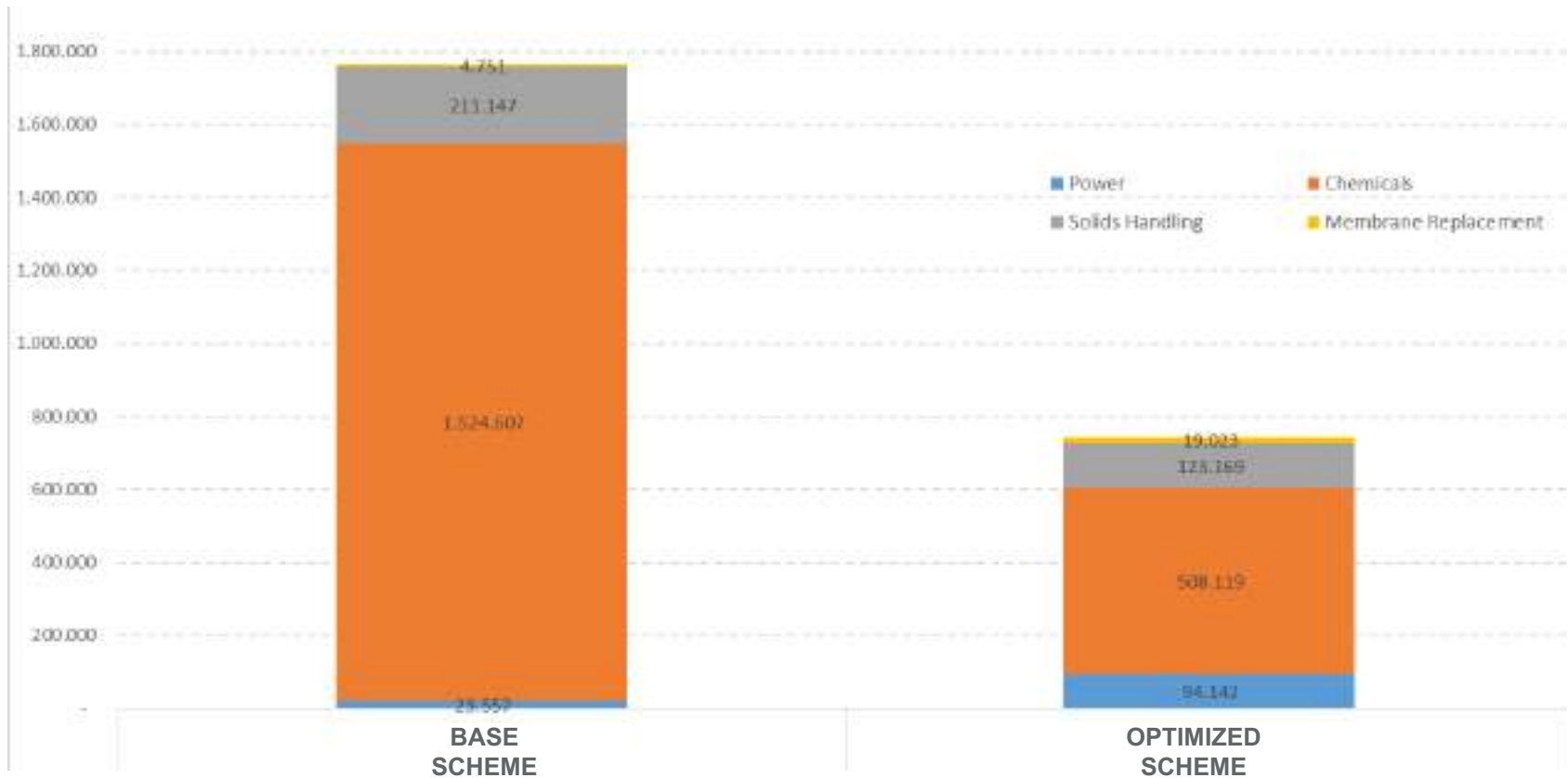
THE RESULTS



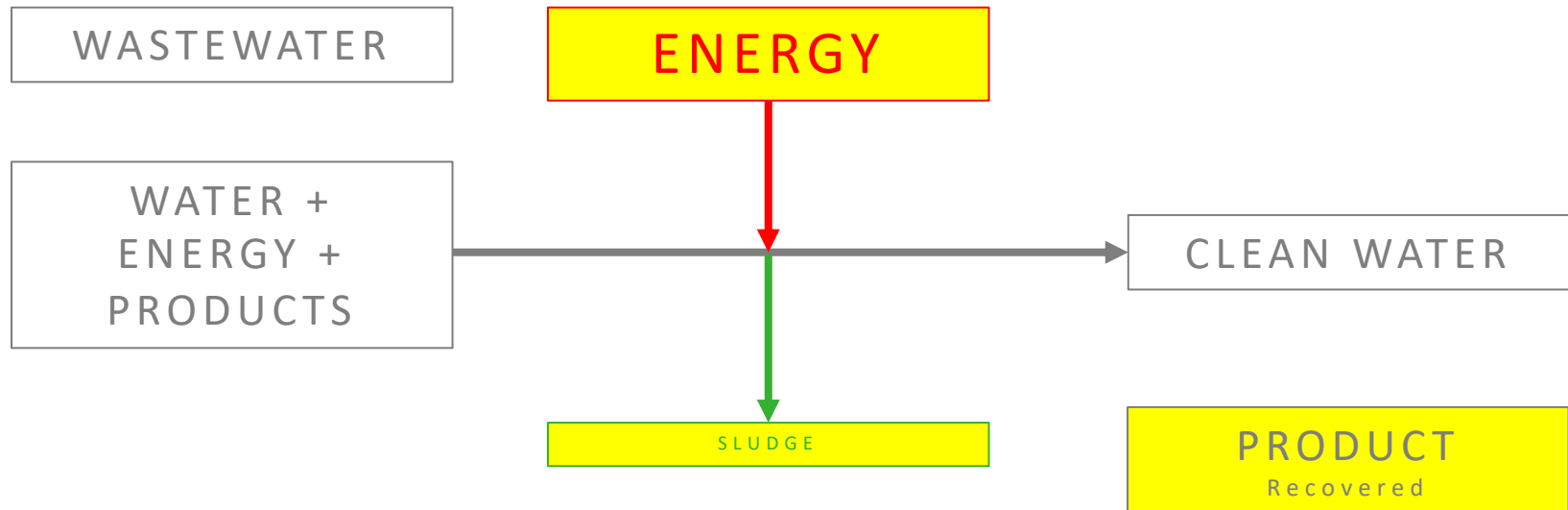
OPTIMIZED SCHEME

SIGNIFICANT OPEX REDUCTION (CASE STUDY – BEAUTY 400 M³/D)

ROI < 1 YR



NEW THINKING INDUSTRIAL CONTEXT



NEW THINKING INDUSTRIAL CONTEXT



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CASE STUDY INDUSTRIAL 2

The energy potential of the wastewater sector

BELGIUM – ORGANIC WASTE DIGESTION (DBFO)

3,2
MWe



BELGIUM – ORGANIC WASTE DIGESTION (DBFO)

WTL New Energy Ypres – Belgium : 3,2 MWe - 7,7 MWth

120,000 TPY Bio-waste :

Pig & Cattle Manure, Chicken litter, Crops, Slaughterhouse and Restaurant waste



BELGIUM – ORGANIC WASTE DIGESTION

Organic waste

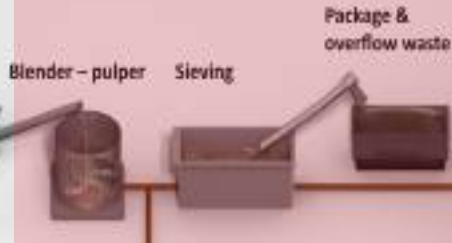
Restaurant waste (solid fraction)



Restaurant waste (wet fraction)



Pre-treatment



Recycle water

Two types of digestors

WET AD

Post-Digestion

Solid fraction treatment

Centrifuge

Hydrogone® drying

DRY organic fertiliser storage

Biogas CHP

Desulphurization

Flare

Steam Boiler

Heat

Steam

HT

LT

Electric power 3.2 MW

Ammonia fertilizer solution

Ammonia stripping unit

Process water

Potassium fertilizer

Liquid fraction - waste water treatment

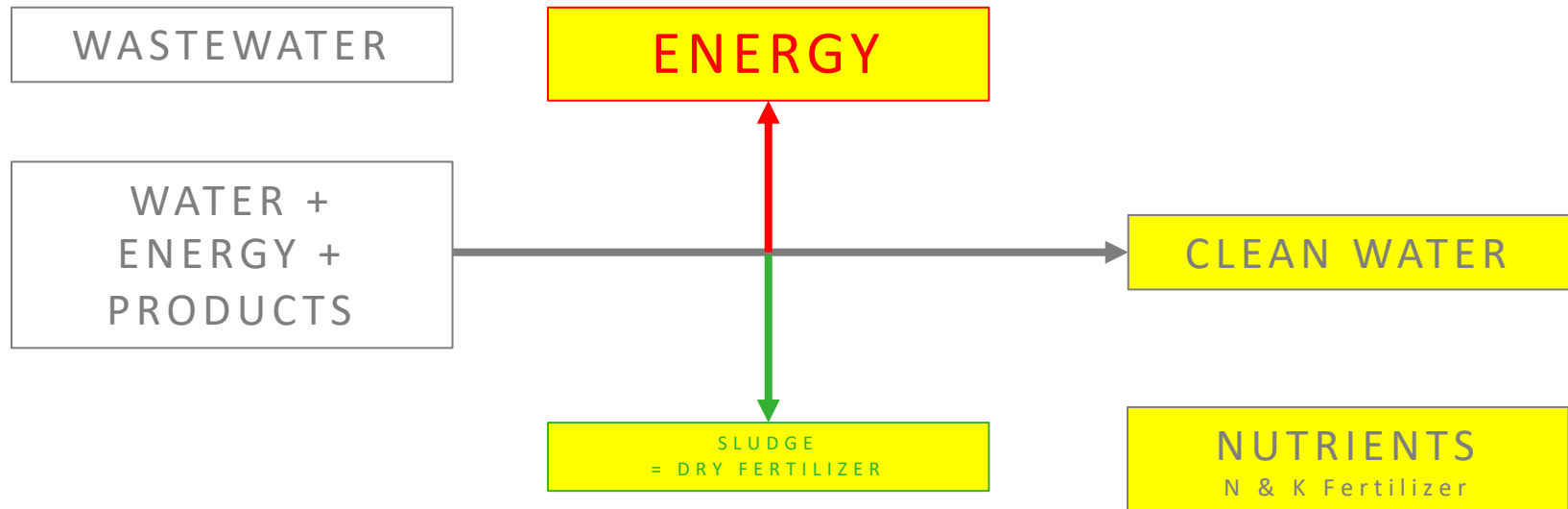
Pump Pit

Water treatment

Input storage evaporation

Evaporator

NEW THINKING INDUSTRIAL CONTEXT



CASE STUDY MUNICIPAL

The energy potential of the wastewater sector

MOROCCO - MARRAKECH

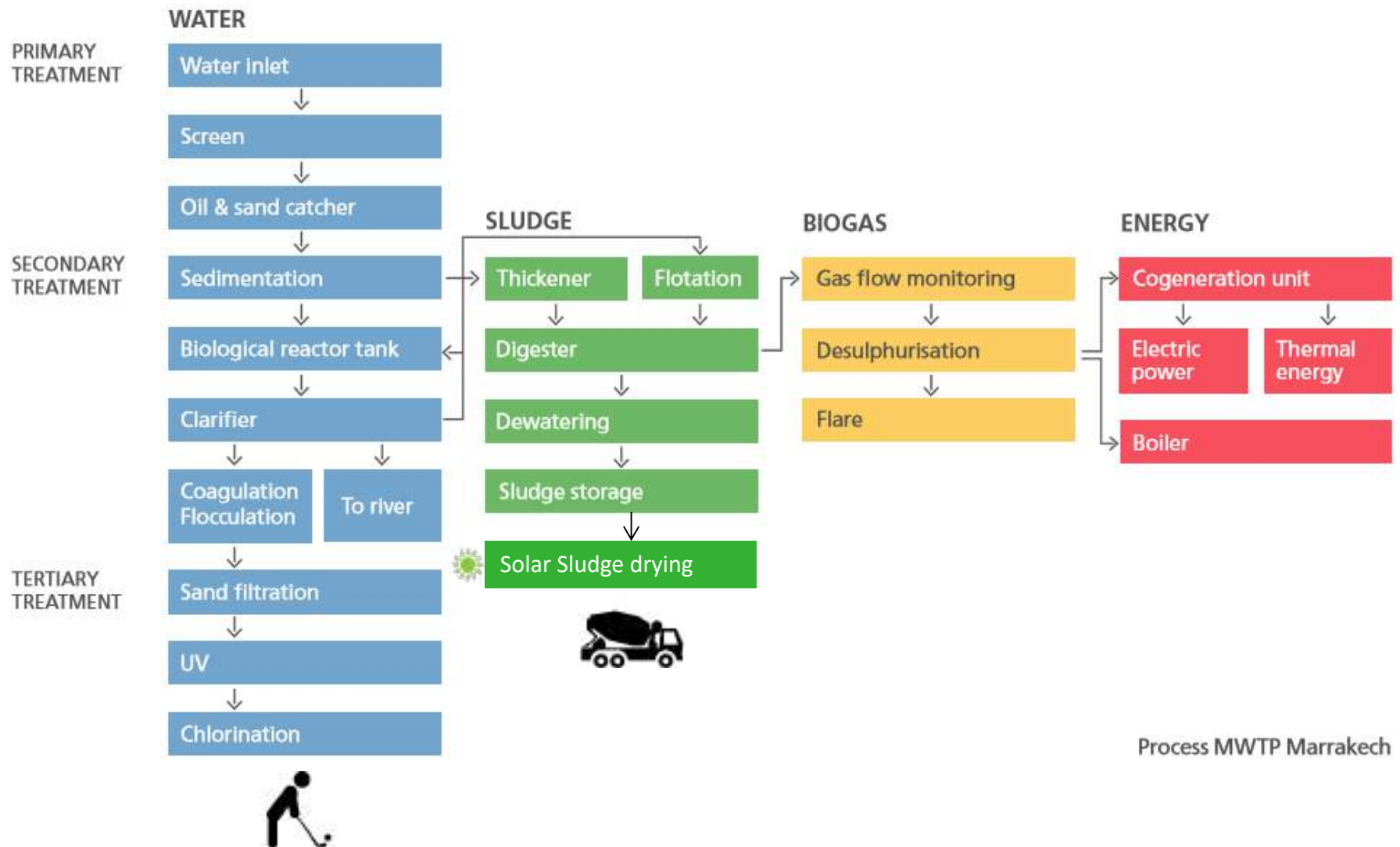


237.000 m³/d
2.200.000 PE
2,75 MWe = 50% E-reg.
O&M: 10 years



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MOROCCO - MARRAKECH



MOROCCO - MARRAKECH

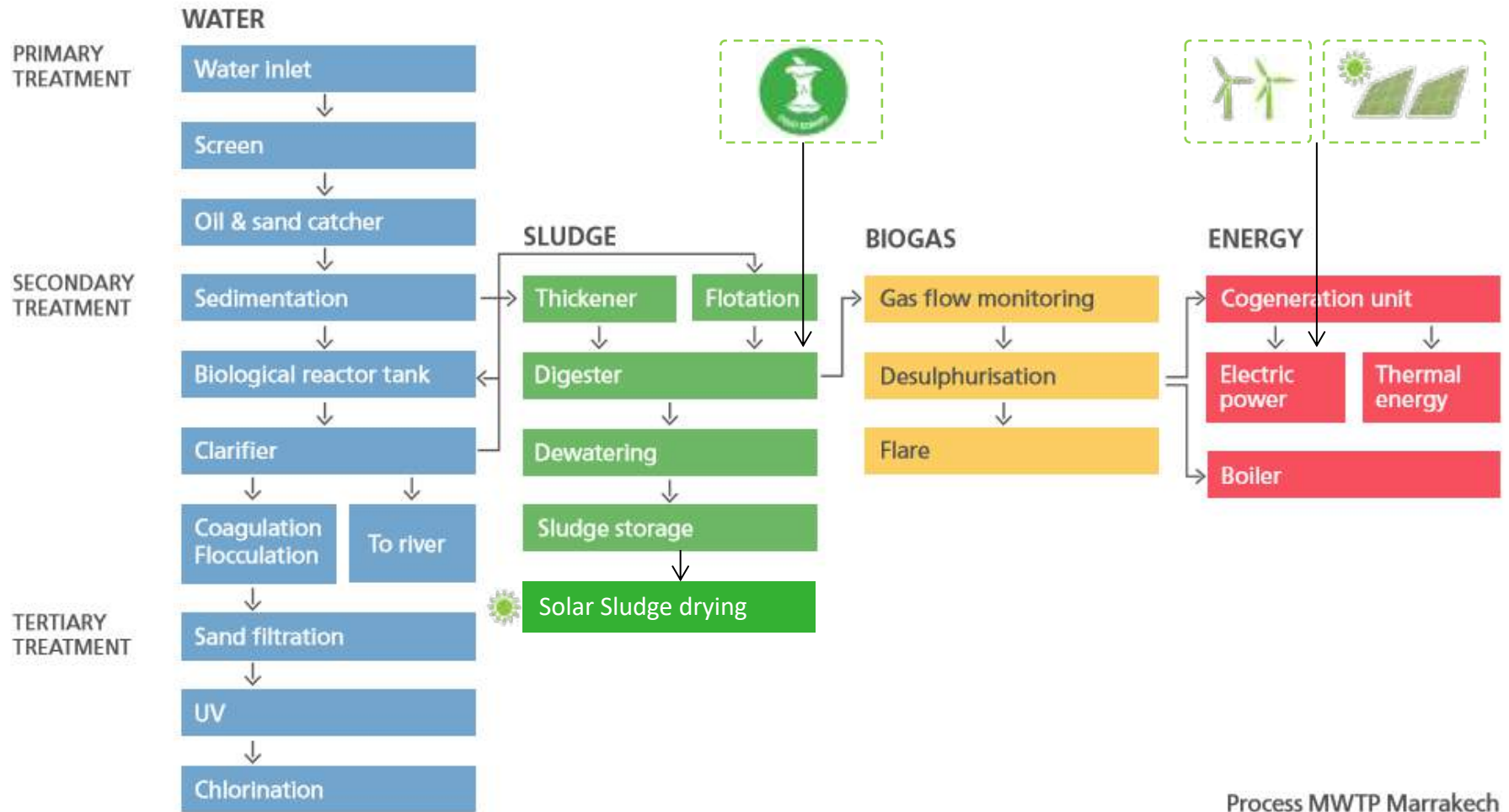
237.000 m³/d
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THERMO-SYSTEM

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MUNICIPAL ENERGY POSITIVE SOLUTIONS – INESS®



“INESS® *Integrated New Energy Solutions & Services*”

MUNICIPAL ENERGY POSITIVE SOLUTIONS – INESS®

“INESS® Integrated New Energy Solutions & Services” – feasibility study for 1 mio PE project



2 Aeolus® wind turbine

Installed capacity: 0.85 MW
Avg. power out: 0.25MWe

3 OFMSW treatment

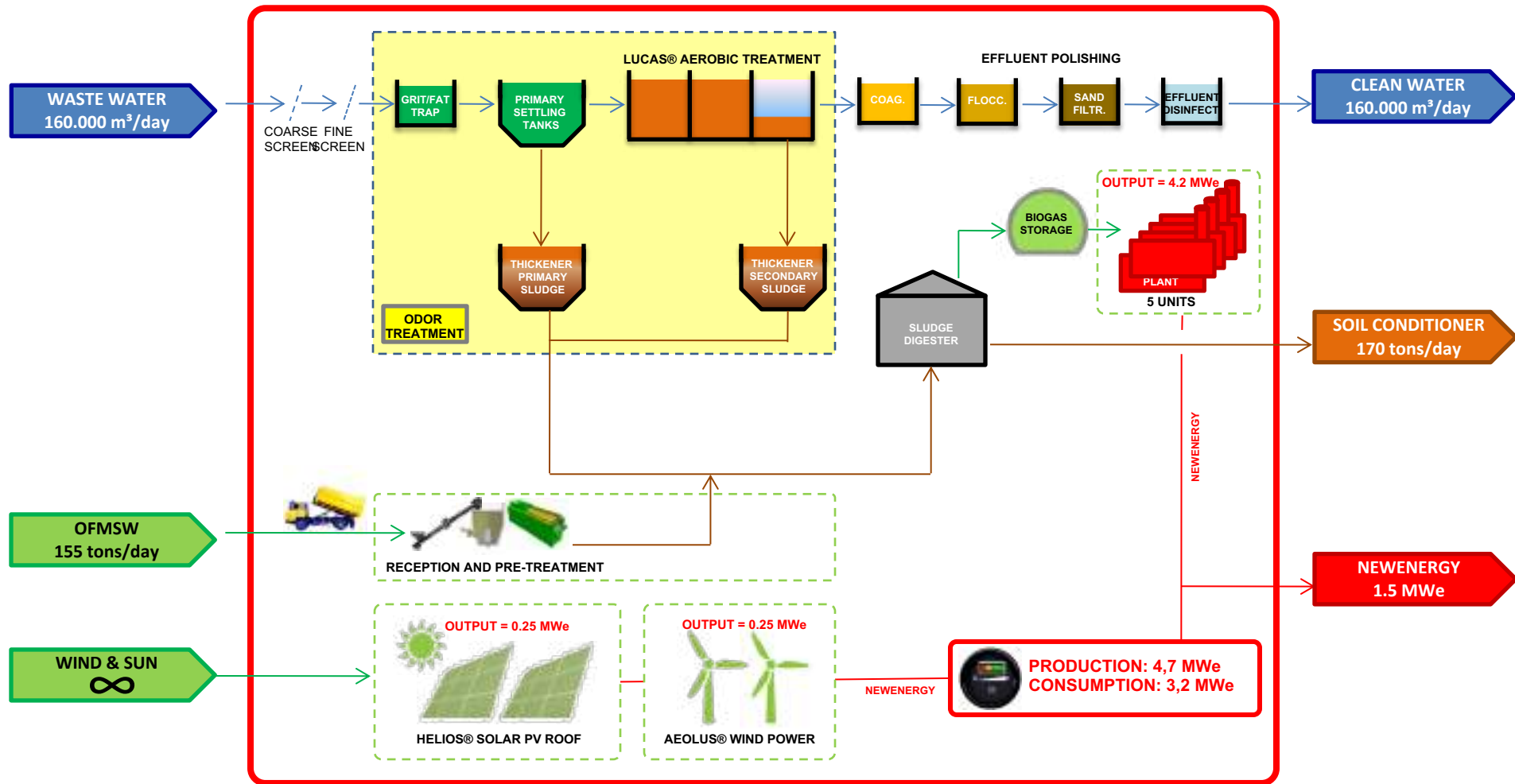
Installed capacity: 4.2 MW
Avg. power out: 4.2 MW

1 Helios® solar PV roof

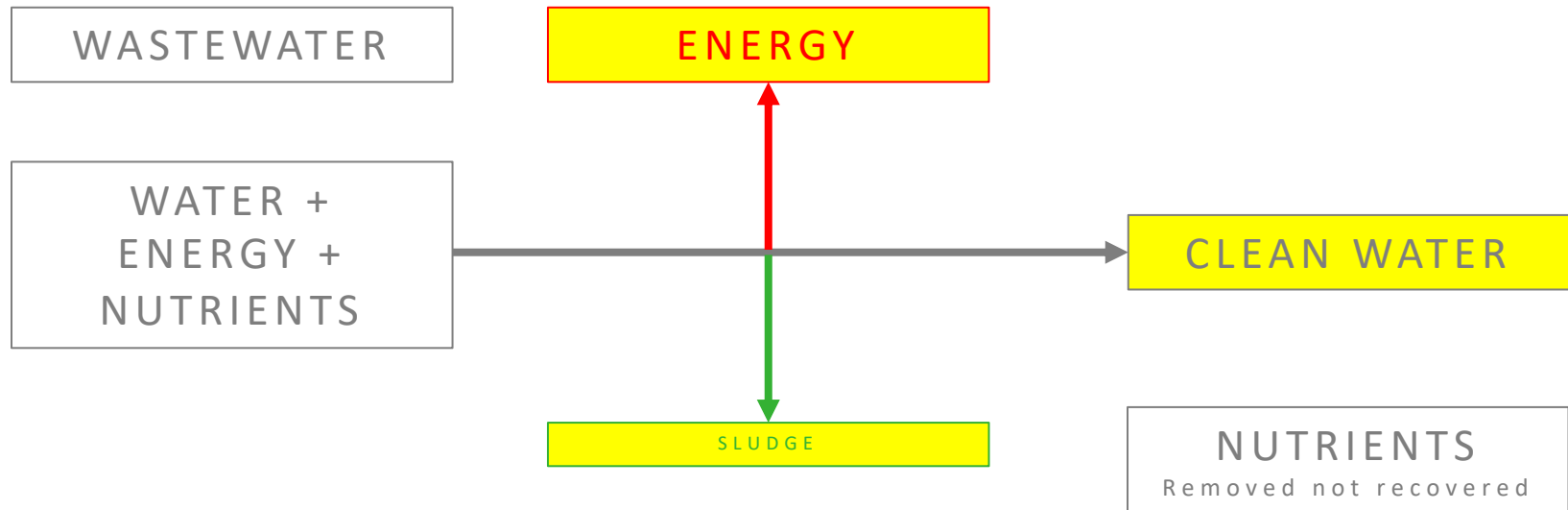
Installed capacity: 1.33 MWp
Avg. power out: 0.25MWe

MUNICIPAL ENERGY POSITIVE SOLUTIONS – INESS®

“INESS® *Integrated New Energy Solutions & Services*” – feasibility study for 1 mio PE project



NEW THINKING MUNICIPAL CONTEXT



QUESTIONS?

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